A Report to the Board of Supervisors

Maricopa County Internal Audit Department

Ross L. Tate
County Auditor

Information Technology Review

Court Technology Services

Juvenile Probation System Conversion

Project Management Improvements Needed to Ensure Operational Continuity

March ■ 2008

The mission of Maricopa County is to provide regional leadership and fiscally responsible, necessary public services so that residents can enjoy living in a healthy and safe community.

The mission of the Internal Audit Department is to provide objective, accurate, and meaningful information about County operations so the Board of Supervisors can make informed decisions to better serve County citizens.

The County Auditor reports directly to the Maricopa County Board of Supervisors, with an advisory reporting relationship to the Citizen's Audit Advisory Committee.

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March 7, 2008

Andrew Kunasek, Chairman, Board of Supervisors
Fulton Brock, Supervisor, District I
Don Stapley, Supervisor, District II
Max W. Wilson, Supervisor, District IV
Mary Rose Wilcox, Supervisor, District V

The Juvenile Probation Department receives its information systems support from Court Technology Services (CTS). Since 2001, CTS has been developing an integrated court information system (iCIS) for all Maricopa County Judicial Branch operations. Juvenile Probation's previous stand-alone system was converted to the iCIS environment in July 2007. This report addresses issues associated with the conversion process. This audit was performed in accordance with the annual audit plan approved by the Board of Supervisors.

Overall, we found that the conversion to iCIS was not well planned and implemented. Associated system problems could impact the ability of Juvenile Probation to appropriately meet statutory requirements and efficiently manage growing caseloads. Highlights of this report include:

- Management of system conversion process was inadequate
- System conversion testing did not verify data was accurate and complete
- User access policy should be strengthened

Within this report you will find an executive summary, specific information on the areas reviewed, and the Court Technology Services' response to our recommendations. We have reviewed this information with Court Technology Services and appreciate the excellent cooperation and quick response provided by management and staff. If you have any questions, or wish to discuss the information presented in this report, please contact Eve Murillo at 506-7245.

Sincerely,

Ross L. Tate

Ross L. Tate
County Auditor

Executive Summary

Management of System Conversion (Page 4)

During the Juvenile Probation system conversion, Court Technology Services did not follow project management best practices; no formal project plan existed. The project experienced delays and the system has not performed as Juvenile Probation had expected. Insufficient planning, lack of documentation, and inconsistent project management can impact implementation results, user acceptance, and timely problem resolution. Court Technology Services should adopt industry guidelines and resolve outstanding conversion issues.

Accuracy and Completeness of Transferred Data (Page 8)

Court Technology Services did not validate the accuracy and completeness of data transferred to the new Juvenile Probation system, or document test results. Lack of accurate data could affect Juvenile Probation's ability to operate effectively. Court Technology Services should establish testing policies and procedures for all future system development activities, and work with Juvenile Probation users to verify that information is accurate and complete.

User Access Policies and Procedures (Page 11)

Currently, users of the Juvenile Probation system appear to have proper access. However, Court Technology Services policies and procedures for granting user access are informally documented. Lack of complete policies and procedures can lead to inappropriate user access. Court Technology Services should work with Juvenile Probation management to define an appropriate policy for user access. Additionally, a comprehensive review should be conducted to evaluate current access.

Reporting and Interface Requirements (Page 14)

Court Technology Services did not formally document reporting and interface requirements for the Juvenile Probation system conversion. This lack of documentation could lead to the inability of Juvenile Probation to obtain needed reports and supply data to other agencies when required. Court Technology Services should work with Juvenile Probation to address remaining reporting and interface requirements.

Conversion Issue Tracking (Page 16)

Project management did not effectively track issues identified during the conversion process. Adequately capturing issue information ensures effective and timely resolution. Court Technology Services should define a complete issue tracking process, including a method of communicating issue resolution to the end-user.

Introduction

Background

The Juvenile Probation Department receives its information systems support from Court Technology Services (CTS). Since 2001, CTS has been developing an integrated court information system (iCIS) for all Maricopa County Judicial Branch operations. Juvenile Probation's stand-alone system, JOLTS, was converted to the iCIS environment in July 2007.

Information Technology (IT) Support of Maricopa County Judicial Branch

Court Technology Services was established in September 2000, initially servicing Maricopa County Superior Court. Consolidating IT services for Justice Courts, Juvenile Probation, and Adult Probation under CTS began in July 2003. The Chief Information Officer reports to the Court Administrator.

iCIS and Juvenile Justice System Technical Overview

Maricopa County Juvenile Court developed the original juvenile justice operations information system, Juvenile Online Tracking System (JOLTS), in 1979. The JOLTS application was written in Common Business-Oriented Language (COBOL), an old programming language, and ran on a mainframe platform (IBM AS/400) over the Arizona Judicial Information Network. JOLTS has been replaced with two versions:

- Maricopa County JOLTS to iCIS
- The rural and Pima JOLTS versions into JOLTSaz, a stand-alone system serving the remaining fourteen Arizona counties

In September 2001, the Administrative Office of the Courts' (AOC) Commission on Technology (COT) approved the Maricopa County Superior Court "Integrated Court Information System" as the County's strategic system.

In 2003, Maricopa County Trial Courts completed implementation of the iCIS project initial phase at four court departments. During the same year, the Initial Court Appearance and the Reconciliation Court modules were added to iCIS. In January 2004, COT approved a statewide enterprise architecture standard (EAS).

The goal for adopting the EAS framework for developing or acquiring future applications was to establish principles, standards, and products that are applied across the Judiciary to leverage technology investments. The COT approved standards included Crystal Enterprise for ad-hoc reporting, .NET for the development environment, and Justice XML Data Dictionary for data exchange.

In addition to EAS, COT approved the "next generation" JOLTS. This was to be a collaborative development effort among the Administrative Office of the Courts (AOC), Maricopa Superior Court, and Pima Superior Court using the .NET architecture. However, Maricopa County elected

to convert to the iCIS environment using Visual Basic (VB) rather than change to the .NET architecture midstream, and then convert the entire iCIS environment to .NET beginning in 2007.

COT approved proceeding with JOLTS development at Maricopa Superior Court and AOC in parallel, provided the data elements, data definitions, code tables, and central repositories remained consistent. The AOC plan included delivery of the Detention module in July 2004 and all other modules by December 2006.

Scope and Methodology

We reviewed iCIS Juvenile Probation system development and implementation from May 2007 to November 2007. The objectives of this audit were to determine whether or not:

- Appropriate project management and systems development methodologies existed and were used over the life of the project
- Data integrity was maintained
- The user provisioning process (add, modify, delete) was functioning appropriately
- Appropriate roles and responsibilities were defined and set up to segregate user groups, while allowing users the level of functionality necessary to perform their duties

We used criteria from the IT Governance Institute's framework, as defined in Control Objectives for Information and Technology (COBIT), to evaluate iCIS Juvenile Probation system development and implementation. We measured Juvenile Probation Department system development and implementation against those guidelines.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Issue 1 Management of System Conversion

Summary

During the Juvenile Probation system conversion, Court Technology Services (CTS) did not follow project management best practices; no formal project plan existed. The project experienced delays and the system has not performed as Juvenile Probation had expected. Insufficient planning, lack of documentation, and inconsistent project management can affect implementation results, user acceptance, and timely problem resolution. Court Technology Services should adopt industry guidelines and resolve outstanding conversion issues.

Criteria

Juvenile Probation requires an effective and efficient information system to fulfill their mission. Guidelines such as Control Objectives for Information and related Technology (COBIT), established by the Information Technology Governance Institute, help to achieve management and control of IT and ensure that information systems meet business requirements. COBIT guidelines state that information systems project management should include formal documentation and written approvals, including the following elements:

- Project plan
- Project timeline
- Data flow diagrams
- Screen and data definitions
- Requirements definition
- Individuals affected
- Communication documentation
- Capacity planning
- A prompt post-implementation review plan that captures, utilizes, and shares project lessons learned

COBIT also recommends using a framework that ensures correct prioritization and coordination of projects to reduce unexpected costs and project cancellations, improves user communications, and ensures project deliverables' value and quality.

Condition

To develop and implement iCIS for use by Juvenile Probation, CTS did not follow industry guidelines such as COBIT. We determined that no formal CTS project plan existed for the Juvenile Probation system conversion. We found the following deficiencies in project planning, formal approvals, and capacity planning:

- While a project timeline was created, it was not formally approved in writing and many items were not marked 100% complete.

- Project staff was assigned to specific roles, but the roles were not documented or formally approved.
- Requirements definitions were documented in a checklist, but only four of the 35 entries were marked as completed.
- A data mapping of existing field definitions to iCIS Juvenile Probation was started but not maintained or completed, and formal approval was not documented.
- An implementation monitoring plan, a fallback plan, a shutdown plan for the existing JOLTS, and system access migration plan were not developed.
- Documentation was not retained or kept current from one project manager to the next, leaving the latest project manager with no documented direction or approvals to proceed with previously agreed upon deliverables.

Effect

Shortly after implementation, the iCIS Juvenile Probation server became overloaded and hardware upgrades were needed. The Juvenile Probation application has not been deemed stable by CTS as of January 2008, although CTS expected a five-month post-implementation stabilization process to extend from August 1 to December 31, 2007.

The Juvenile Probation Department may not be able to meet statutory requirements or manage growing caseloads. Inconsistent and ineffective automated information system planning, documentation, and project management can impact implementation results and costs, user acceptance, and timely problem resolution.

Cause

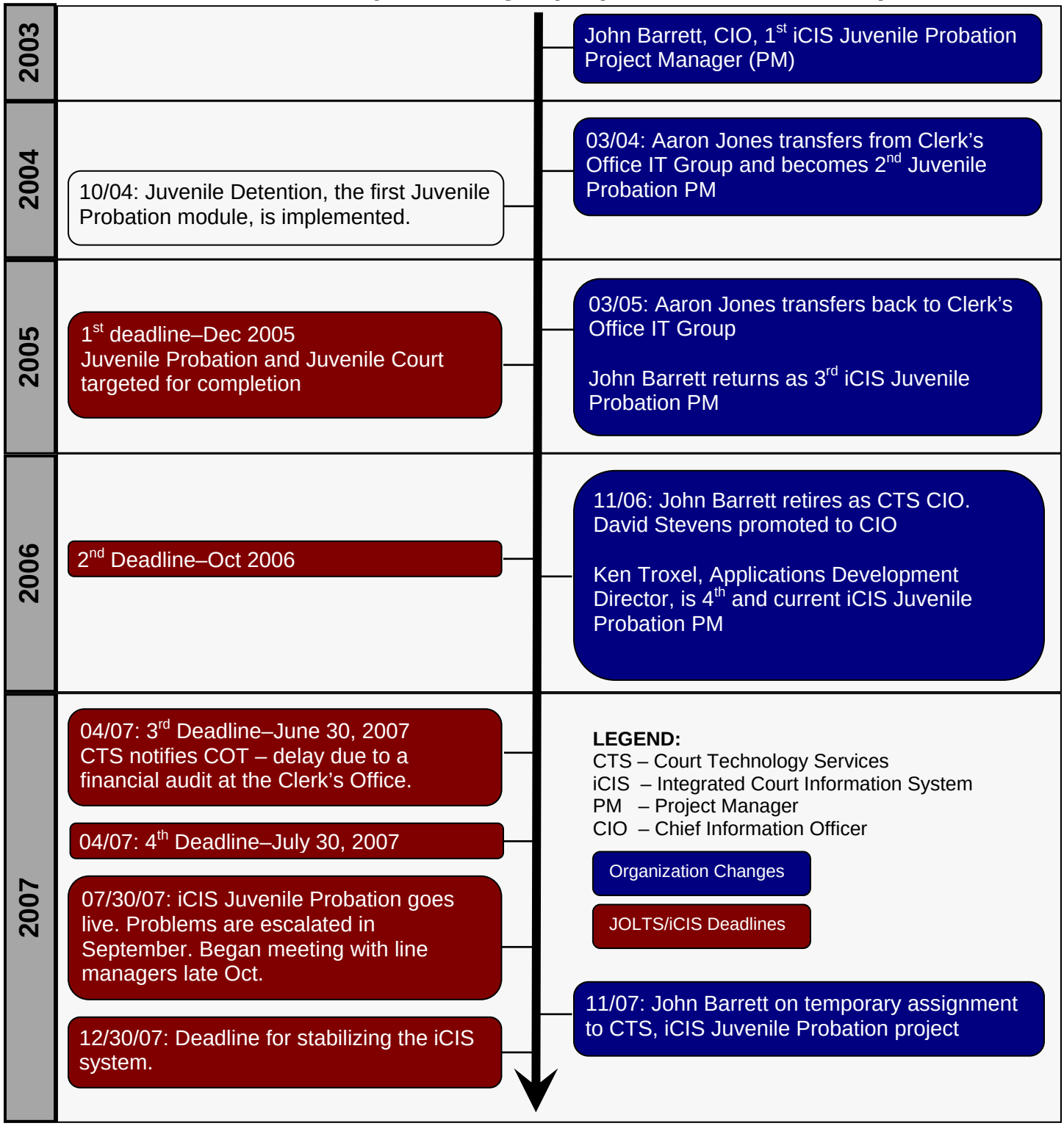
CTS project managers who were responsible for the Juvenile Probation upgrade did not stay for the duration of the project. In fact, four project managers were assigned in three years during the development life cycle. Each project manager had limited documented and approved plans to guide his proceeding with previously agreed-upon deliverables.

Through interviews with the project management team and review of project documentation, we concluded that iCIS Juvenile Probation project management internal controls are at a level 2 out of a potential 5 on the COBIT Maturity Model, with level 3 considered an acceptable level. Internal controls maturity levels range from non-existent (0) to optimized (5). Measured by COBIT, CTS project controls are "repeatable but intuitive." COBIT explains this level as follows:

> "Some intuitive approaches to identify IT solutions exist and vary across the business. Solutions are identified informally based on the internal experience and knowledge of the IT function. The success of each project depends on the expertise of a few key individuals. The quality of documentation and decision-making varies considerably. Unstructured approaches are used to define requirements and identify technology solutions."

The graph below sets out the timeline for the JOLTS to iCIS Juvenile Probation conversion.

JOLTS to iCIS Timeline -- Project Manager (PM) Turnover Affects Implementation



Recommendation

CTS management should:

A. Meet with key Juvenile Probation user management to determine what deliverables were expected and to assess what deliverables have not been implemented.

B. Create a project plan for the delivery of outstanding items.

C. Perform a review of current iCIS hardware and capacity status to ensure future system scalability and stability.

D. Document components and data changes for additional iCIS system changes to provide a framework of the system and data flow.

Issue 2 Accuracy and Completeness of Transferred Data

Summary

Court Technology Services did not validate the accuracy and completeness of data transferred to the new Juvenile Probation system, or document test results. Lack of accurate data could affect Juvenile Probation's ability to operate effectively. Court Technology Services should establish testing policies and procedures for all future system development activities, and work with Juvenile Probation users to verify that information is accurate and complete.

Criteria

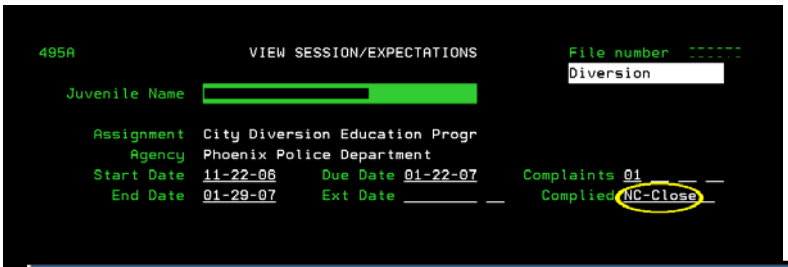
COBIT guidelines state that project management should thoroughly document system testing, results, approvals, and associated planning in order to verify that testing is complete, accurate, and properly performed by the people conducting unit and user acceptance testing. This assures that operational systems meet the agreed-upon expectations and provide the desired outcomes. Data should be verified by knowledgeable people to ensure information integrity, accurateness, and completeness.

Condition

In our review of the CTS implementation of the Juvenile Probation system upgrade, we found that:

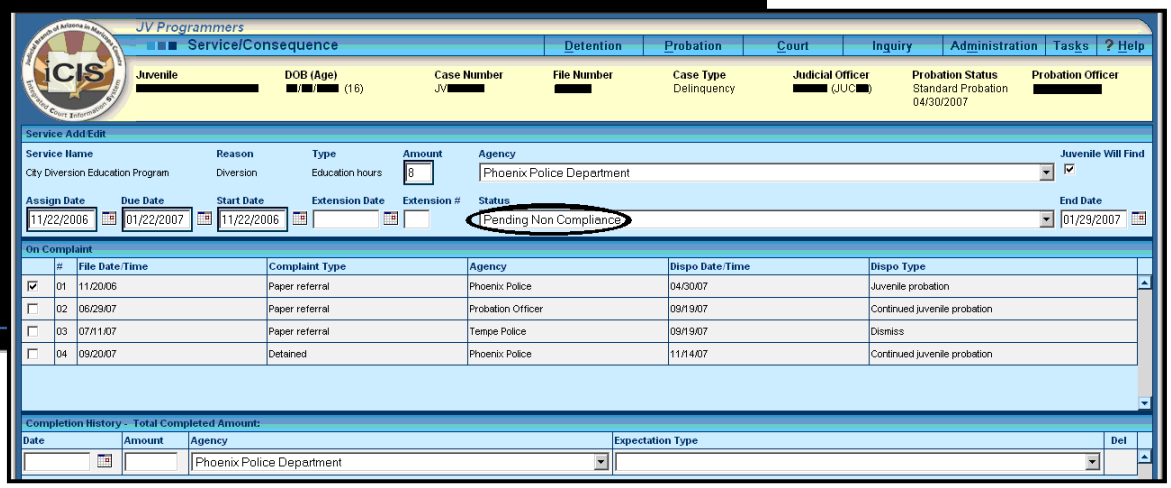
- System, unit, and user acceptance testing was insufficiently documented.
- Although a testing checklist was created, test criteria to evaluate the results were not clear.
- While CTS identified who was responsible for each portion of testing, neither test results nor user approval was documented.
- Test items follow-up did occur, but was not documented.
- Data uploaded from JOLTS to iCIS Juvenile Probation was not validated completely by Juvenile Probation staff to ensure the information was accurate and complete prior to being relied upon in court operations. For example, we verified a specific case where a juvenile record was closed in JOLTS but appeared as "pending" in iCIS Juvenile Probation, as illustrated in the graphic on the following page.

JOLTS to iCIS Data Conversion



Left: JOLTS screenshot showing the case as closed.

Below: iCIS showing the same case as pending.



Effect

Because iCIS Juvenile Probation testing results were not documented, we could not verify that the application was appropriately tested by key system users. Incomplete system, unit, and user acceptance testing could increase the risk of problems arising after the application is placed into production. Inaccurate or incomplete data relied upon by Juvenile Probation staff could lead to incorrect operational decisions. Additionally, unreliable data can delay case processing and possibly cause loss of information or revenue.

Through interviews with the project management team and review of project documentation, we concluded that iCIS Juvenile Probation testing internal controls are at a level 1 out of a potential 5 on the COBIT Maturity Model, with level 3 considered an acceptable level. Maturity levels range from non-existent (0) to optimized (5). Essentially, CTS project controls are, according to the COBIT model, "initial/ad hoc." COBIT explains this level as follows:

> "There is an awareness of the need to verify and confirm that implemented solutions serve the intended purpose. Testing is performed for some projects, but the initiative for testing is left to the individual project teams and the approaches taken vary. Formal accreditation and sign-off are rare to non-existent."

Cause

High project management turnover may have led to poor test planning. Over a three-year period, four project managers led the project.

Recommendation

CTS management should:

A. Establish testing policies and procedures for all system implementations to reduce the risk of project delays, cost overruns, and the system not performing as intended. Test documentation should be reviewed, approved, and maintained.

B. Establish a plan to verify data uploaded from JOLTS to iCIS, to ensure information integrity and completeness.

Issue 3 User Access Policies and Procedures

Summary

Currently, users of the Juvenile Probation system appear to have proper access. However, Court Technology Services policies and procedures for granting user access are informally documented. Lack of complete policies and procedures can lead to inappropriate user access. Court Technology Services should work with Juvenile Probation management to define an appropriate policy for user access. Additionally, a comprehensive review should be conducted to evaluate current access.

Criteria

COBIT guidelines include a formal documented process to request, approve, grant, and review access to automated systems, including a consideration for:

- Appropriate nature of user access
- Segregation of duties
- Checks against a segregation of duties matrix
- General rules of least necessary access

Condition

Court personnel have appropriate iCIS Juvenile Probation access. Additionally, iCIS Juvenile Probation access rights for the Clerk of the Court appeared appropriately assigned based upon responsibility. However, we found the following deficiencies in the user access processes:

- A segregation of duties matrix has not been documented to ensure a person's authorization rights in the system are appropriate for his or her role in the organization.
- As of November 30, 2007, 21 of 60 employees terminated between July 2 and November 1, 2007, had active user accounts in iCIS.
- Of 35 sampled individuals, 13 CTS employees were granted total access to "JV Finance." This appears to be excessive. One of the 13, an ICJIS employee, was granted "JV Finance" access because he was on temporary assignment to the project.
- 26 of 28 CTS personnel have total access to iCIS Issue Tracker. This large number weakens controls over problem status and reporting.
- Generic user categories appear excessive in Juvenile Web Access, which can weaken user account management. Of 117 individuals, 54 were labeled as "User" and 63 as "Attorney."
- One individual appears to have two accounts, contrary to CTS policy and procedure that authorizes only one account per user.
- Originally, all user access was granted through an email list without formal forms. No documentation on the process of granting user access existed.

- While a user provisioning policy existed, we found the policy needed additional controls related to access request submittal and review.
- Juvenile Probation management has not performed complete user access reviews on a regular basis. They were unaware of a policy and procedure to perform such a review.
- In certain cases, complete juvenile profile access is granted to more than one Juvenile Probation officer even though they are performing different functions.

Effect

The lack of any formal user provisioning process may lead to inappropriate user access levels in the iCIS system. Inappropriate access to the system could cause intentional or unintentional data alterations, including altered financial data, or access to sensitive information. Lack of a formal user access segregation of duties review process could lead to ongoing inappropriate access or low levels of access that could lead to either high risk of errors or lack of operational efficiency on a day-to-day basis.

Cause

The iCIS Juvenile Probation project experienced high project manager turnover. User provisioning documentation was not retained or kept current from one project manager to the next, leaving the subsequent project manager with limited documentation to evidence user provisioning. Lack of a formal user provisioning policy compounds these effects.

Removal of terminated employees from the system may be impeded by the personnel change notification process.

Through interviews with the project management team and review of the project documentation, we concluded that the iCIS Juvenile Probation user provisioning and segregation of duties internal controls are at a level 2.5 out of a potential 5 on the COBIT Maturity Model, with level 3 considered an acceptable level. Maturity levels range from non-existent (0) to optimized (5). Essentially, CTS project controls are, according to the model, "repeatable and defined but not fully developed."

Recommendation

CTS management should:

A. Work with Juvenile Probation management to create a user provisioning and segregation of duties policy and procedure, which includes:

- A segregation of duties matrix that specifies access by job function.
- A process to periodically review user access to ensure appropriate access is granted and terminated employees no longer have access.

B. Obtain key process owner approval on the policy to ensure understanding of the approval and documentation necessary for all new user provisioning requests.

C. Have CTS project management office review iCIS Issue Tracker access privileges to better control issue status and reporting.

D. Request a review of the personnel change notification process by Judicial Branch Human Resources.

Issue 4 Reporting and Interface Requirements

Summary

Court Technology Services did not formally document reporting and interface requirements for the Juvenile Probation system conversion. This lack of documentation could lead to the inability of Juvenile Probation to obtain needed reports and supply data to other agencies when required. Court Technology Services should work with Juvenile Probation to address remaining reporting and interface requirements.

Criteria

COBIT guidelines state that project management for output data processing should include formal documentation and written approvals of the business requirements for periodic reports. Additionally, formal documentation and approval should consist of report lists from the old and new system, report mapping exercises, and inbound and outbound system interface requirements, as well as report acceptance.

Condition

We found that:

- JOLTS reports that were considered no longer necessary were not transferred over to iCIS Juvenile Probation. Some reports in JOLTS were considered redundant and were combined into iCIS. However, cumulative lists of iCIS reports or a mapping exercise between JOLTS to iCIS reports was not documented.
- CTS could not produce a standard listing of all iCIS Juvenile Probation reports.
- Although CTS explained that interface testing was performed prior to implementation for external entities that receive data from iCIS Juvenile Probation, inbound or outbound system interface requirements were not formally documented.
- Crystal Report Writer version 8, used in production, is outdated and thus is no longer supported by the vendor, Business Objects (SAP), as shown on the End of Product Life Support List.

Effect

Lack of formal interface and report documentation could lead to issues concerning:

- Juvenile Probation business processing
- Compliance with legal and regulatory reporting
- Data transfers to other agencies
- Undetected system vulnerabilities

Cause

The project experienced high project manager turnover. Documentation was not retained or kept current from one project manager to the next, leaving the subsequent project manager with no documented output data processing plans or approvals. Additionally, it is possible that end-user requirements simply were not considered or were not granted sufficient priority for system reporting and output/input considerations.

Through interviews with the project management team and review of project documentation, we concluded that iCIS Juvenile Probation internal controls are at a level 2 out of a potential 5 on the COBIT Maturity Model, with level 3 considered an acceptable level. Maturity levels range from non-existing (0) to optimized (5). Essentially, CTS project controls are "repeatable but intuitive."

Recommendation

CTS management should:

A. Generate a complete list of iCIS Juvenile Probation reports (from Crystal Reports).

B. Meet with key end-users and perform a report requirements review to ensure that the current reports in iCIS Juvenile Probation meet business and regulatory reporting requirements.

C. Meet with key end-users and determine inbound and outbound system interface requirements. Generate a list of all existing inbound and outbound system interfaces and compare the two lists to ensure all interfaces exist, are secure, and supply accurate information.

D. Evaluate Crystal Report version upgrade options.

Issue 5 Conversion Issue Tracking

Summary

Project management did not effectively track issues identified during the conversion process. Adequately capturing issue information ensures effective and timely resolution. Court Technology Services should define a complete issue tracking process, including a method of communicating issue resolution to the end-user.

Criteria

COBIT guidelines state that effective problem management requires the following steps:

- Identification and classification of problems
- Root cause analysis
- Resolution of problems
- Formulation of recommendations
- Maintenance of problem records
- Review corrective action status

An effective problem-management process maximizes system availability, improves service levels, reduces costs, and improves customer convenience and satisfaction.

Condition

Through inquiry with key end-users and CTS, we determined that:

- Issues were initially tracked in a spreadsheet before a formal issue tracking system was implemented. Upon implementation of the formal tracking system, iCIS Issue Tracker, only open issues were transferred from the spreadsheet, so the tracking system does not contain a comprehensive list of all issues for the duration of the project.
- Priority levels and resources were not assigned to all issues.
- Root cause analysis of issues was not evident.
- When issues were closed by CTS, end-users were initially not being notified.
- Based on end-user sample testing, some issues that show as "closed" in the iCIS Issue Tracker still are unresolved from an end-user perspective.
- Twenty-five issues identified as closed were selected to determine if resolution was documented. Seventeen of 25 sampled issues (68%) did not contain appropriate information surrounding issue resolution.
- CTS is not proactively reviewing audit logs.

Effect

When implementation issues are not properly documented, they could remain open and may not receive the needed attention of project management. The lack of monitoring can lead to weak accountability for issue closure and can hinder resolution. The root causes of issues can be repeated if they are not identified and addressed. Lack of end-user notification of issues can lead to unresolved issue closure. Unresolved issue closure can lead to system errors, users creating work-arounds, or inaccurate financial data.

Cause

CTS lacks change management standards and procedures.

Through interviews with the project management team and review of project documentation, it appears that iCIS Juvenile Probation problem management internal controls are at a level 2 out of a potential 5 on the COBIT Maturity Model, with level 3 considered an acceptable level. The model levels range from non-existent (0) to optimized (5). Essentially, CTS project controls are "repeatable but intuitive."

Recommendation

CTS management should:

A. Define a policy and procedure outlining what information is to be captured for all issues, where such information should be placed, and the method of notifying end-users of resolution. Examples include:

- Priority levels and resources
- Root cause analysis of issues
- End-user notification

B. Review audit logs on a regular basis (routinely but no less than quarterly) instead of waiting until there is an exception or investigation.

Department Response

JUDICIAL BRANCH OF ARIZONA

COUNTY OF MARICOPA

OFFICE OF THE COURT ADMINISTRATOR
COURT TECHNOLOGY SERVICES

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"Committed to the Timely, Fair and Impartial Administration of Justice"

To:	Ross L. Tate, County Auditor
From:	Marcus W. Reinkensmeyer, Court Administrator, Judicial Branch
Subject:	Internal Audit of Juvenile Probation System Conversion
Date:	March 3, 2008

This letter is in response to your audit report: Internal Audit of Juvenile Probation System Conversion by Court Technology Services (CTS) dated February 7, 2008.

At this writing we are pleased to inform you that the following Juvenile Probation System Conversion stakeholders, in recent regular meetings with them, have given their favorable acceptance of the Juvenile Probation System Conversion into iCIS:

- The Hon. Barbara R. Mundell, Presiding Judge
- Marcus W. Reinkensmeyer, Court Administrator
- Phil Knox, Court Administrator General Jurisdiction
- Carol Boone, Chief Juvenile Probation Officer
- Eileen Willet, Juvenile Court Presiding Judge

Moreover, ten out of your sixteen recommendations are completed and implemented resulting in improved usability and reliability of the new system.

The audit itself took place within a few months of implementation, during a time when we were concentrating on ensuring a smooth transition from the twenty-five year old JOLTS system to the new iCIS system.

We summarily concur, with modifications, with your audit's findings as follows:

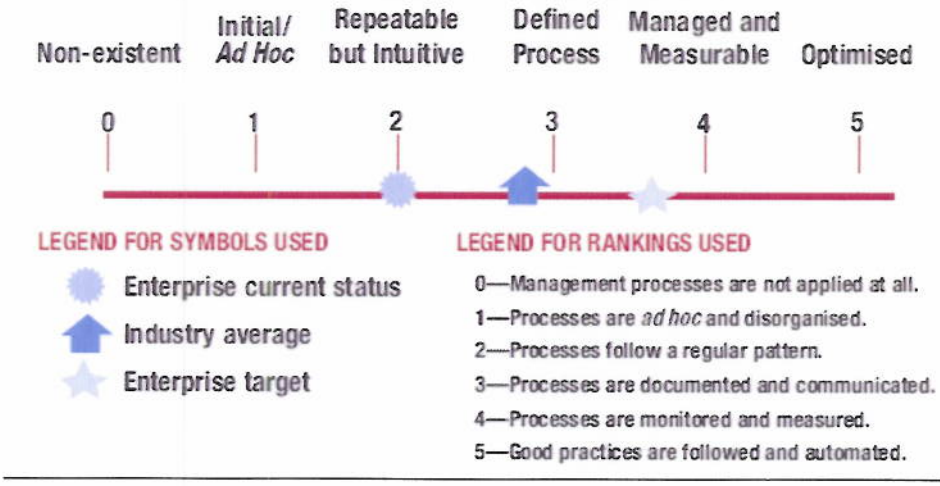
- Management of system conversion process was inadequate –

  We recognize that CTS's management staffing level on many facets of this large scale and complex project was below industry average standards and, as a result, we have taken action by

hiring a Director of Project Management Office (PMO) to bring CTS's capacity level to industry average or better by CObIT standards. Efforts are underway to establish the CTS PMO.

With our new PMO in place, our CObIT maturity model goal for short-term goal (one-year) is to reach level three or above and our three-year goal is to reach level four or above.

Figure 12—Graphic Representation of Maturity Models



- System conversion testing did not verify data was accurate and complete –

CTS converted into iCIS a legacy system (JOLTS), which was used for twenty-five years. JOLTS accumulated significant hidden data that remained unseen by end-users until such data was available in the new system. In other words, preexisting data integrity problems, which were acknowledged by the Juvenile Probation department, were inherent in JOLTS. CTS corrected many of these problems from May 2007 through January 16, 2008. Only one discrepancy was actually found by the auditors and it was corrected within twenty minutes while the auditors were on site.

Perception of data inaccuracies and incompleteness also surfaced due to the following:

a) The large scope and complexity of this next generation system implementation.

b) The slow understanding by end-users of business processes that changed as a result of the conversion to a new system.

c) The limited documentation by CTS of the data testing, approval, and training processes.

CTS has embarked on conducting new training classes that focus on the changed business processes in order to eliminate misunderstandings of how data is used in screens and reports.

The CTS PMO will establish and enforce controls specifically to address data verification, testing, and customer training procedures.

- User access policy should be strengthened –

CTS provided access control to the Juvenile Probation department with the same, and better, end-user capability found in JOLTS; iCIS provides a very robust means of granting (and denying) access to iCIS features. Due to resource limitations, the provisioning scheme that was implemented by CTS, although consistent with the JOLTS provisioning system, was not fully reviewed for its total adherence to modern CObIT and more stringent standards.

CTS will advise and assist the Juvenile Probation department to redesign its provisioning scheme for iCIS for the purpose of enforcing more stringent controls of the department's operations.

Please find in the attached document our individual responses to the five issues and to your recommendations. If you have any questions regarding this draft response, please contact me at (602)506-3190 or David L. Stevens at (602)506-1531.

Attachment:

C. Eve Murillo, Deputy Internal Audit

AUDIT RESPONSE

Judicial Branch Court Technology Services (CTS)

Juvenile Probation Conversion

March 3, 2008

Issue 1 Management of System Conversion

During the Juvenile Probation system conversion, Court Technology Services did not follow project management best practices; no formal project plan existed. The project experienced delays and the system has not performed as Juvenile Probation had expected. Insufficient planning, lack of documentation, and inconsistent project management can impact implementation results, user acceptance, and timely problem resolution. Court Technology Services should adopt industry guidelines and resolve outstanding conversion issues.

Response: Concur. CTS developed the necessary project plans but did not follow formal procedures to execute the plans during the entire life of the project. CTS recently hired a Director who is charged with establishing a Project Management Office whose responsibility is to develop and enforce the necessary controls that will bring CTS's current maturity level in project planning, documentation, implementation, user acceptance, problem resolution, and in review and approval processes to acceptable industry standards. CTS's short-term goal (1-year) is to reach CObIT maturity Level 3 or above and our three-year goal is to reach Level 4 or above.

Recommendation A: Meet with key Juvenile Probation user management to determine what deliverables were expected and to assess what deliverables have not been implemented.

Response: **Concur - Completed**. In mid-October 2007, CTS met with key stakeholders to determine what modules and items required completion to stabilize the application. At that time, a plan was created that included target dates. CTS CIO, David Stevens, met weekly with stakeholders to report progress of outstanding issues. On January 16, 2008, a consensus was reached that the system had reached reliable status.

Completion Date: **10/31/2007 through January 16, 2008**

Benefits/Costs:

Recommendation B: Create a project plan for the delivery of outstanding items.

Response: **Concur** – In Process. As the system continues to operate, additional business needs surface and supporting adjustments to software components are required, as is normal with new system implementations. At present there exist a nominal number of issues that require resolution. CTS is developing a plan, which includes a work-breakdown structure for the delivery of these outstanding items and will obtain plan approval from stakeholders.

Target Completion Date: **February 29, 2008.**

Benefits/Costs:

Recommendation C: Perform a review of current iCIS hardware and capacity status to ensure future system scalability and stability.

Response: **Concur - Completed / In process.** CTS conducted performance evaluations of all Juvenile Probation modules in iCIS and made programming changes to certain modules; this resulted in significantly improved system performance that is noticeable to end-users.

Furthermore, on February 22, 2008, CTS received verbal approval from OMB to proceed with a data center hardware purchase that will significantly improve the performance of the two database servers used with iCIS. These servers will provide adequate capacity for the next twelve to eighteen months. At that time, CTS will replace all the iCIS hardware with hardware that ensures future scalability and continuing stability.

Target Completion Date: Juvenile Probation modules performance tuning: **Aug. 31, 2007**
Hardware replacement: April 30, 2008

Benefits/Costs: Juvenile Probation modules' code is optimized for performance. iCIS will run on a hardware platform that is stable and capable of meeting growth expectations. Hardware costs: $150,000.

Recommendation D: Document components and data changes for additional iCIS system changes to provide a framework of the system and data flow.

Response: **Concur** - In Process. CTS will develop required documentation. Moreover, the CTS PMO will institute mechanisms to control changes to the iCIS application.

Target Completion Date: May 19, 2008

Benefits/Costs: Continued process improvement and inventory of existing system integration points.

Issue 2 Accuracy and Completeness of Transferred Data

Court Technology Services did not validate the accuracy and completeness of data transferred to the new Juvenile Probation system or document test results. Lack of accurate data could affect Juvenile Probation's ability to operate effectively. Court Technology Services should establish testing policies and procedures for all future system development activities, and work with Juvenile Probation users to verify that information is accurate and complete.

Response: **Concur with modification**. CTS converted into iCIS a legacy system (JOLTS), which was used for twenty-five years. JOLTS accumulated significant hidden data that remained unseen by end-users until such data was available (and put "under the microscope") in the new system. In other words, preexisting data integrity problems, which were acknowledged by the Juvenile Probation department, were inherent in JOLTS. CTS corrected many of these problems from May 2007 through January 16, 2008. Only one discrepancy was actually found by the auditors and it was corrected within twenty minutes while the auditors were on site.

Perception of data inaccuracies and incompleteness also surfaced due to the following:

a) The slow understanding by the end-users of business processes that changed as a result of the conversion to a new system.

b) The limited documentation by CTS of the data testing, approval, and training processes.

c) The large scope and complexity of the new system implementation.

CTS has embarked on conducting new training programs that focus on the changed business processes in order to eliminate misunderstandings of how data is used in screens and reports. These programs range from classroom training, on-site training, one-on-one training, and online training available via the Intranet. Classes feature video presentations, training manuals, job aid materials and open laboratory equipment. Specifically prepared for the Juvenile Probation department, there are nineteen different classes that are customized for each group of users. Add to these the twelve "Specialty Classes" wherein, for example, students learn how to print or learn Tips & Tricks.

The CTS PMO will establish and enforce controls specifically to more fully address data verification, testing, and customer training procedures.

Recommendation A: Establish testing policies and procedures for all system implementations to further reduce the risk of the system not performing as intended, project delays and cost overruns. Under the new CTS protocols, all test documentation will be reviewed, approved, and maintained.

Response: **Concur** – In Process. The CTS PMO will establish and enforce appropriate testing policies and procedures for all system implementations.

Target Completion Date: May 19, 2008

Benefits/Costs: Adequate implementation testing policies and procedures will reduce the risk of problems.

Recommendation B: Establish a plan to verify data uploaded from JOLTS to iCIS, to ensure the integrity and completeness of information.

Response: **Concur – Completed.** CTS did verify/audit specific portions of the data conversion. CTS worked very closely with staff from the Clerk of the Court's Office to audit the conversion of the data from both financial and non-financial modules. CTS and the Clerk of the Court's office identified key areas of the conversion and documented the results and findings. CTS received confirmation from the Clerk of Court's auditor that all issues regarding the conversion appeared to be fully resolved prior to the live system conversion.

Completion Date: October 31, 2007.

Benefits:

Issue 3 User Access Policies and Procedures

Currently, users of the Juvenile Probation system have stronger access security, roles, and polices over the previous system. However, Court Technology Services policies and procedures for granting user access are somewhat informal in terms of documentation. Court Technology Services plans to coordinate with Juvenile Probation management to define an appropriate policy for user access. A comprehensive review is to be conducted to evaluate current access.

Response: **Concur with modification.** CTS provided access control to the Juvenile Probation department with the same, and better, end-user capability found in JOLTS; iCIS provides a very robust means of granting (and denying) access to iCIS features. The provisioning scheme that was implemented by CTS, although consistent with the JOLTS provisioning system, was not reviewed fully for its adherence to modern CObIT and more stringent standards.

CTS will advise and assist the Juvenile Probation department to redesign its provisioning scheme for iCIS for the purpose of enforcing more stringent controls of the department's operations.

Recommendation A: Work with Juvenile Probation management to create a user provisioning and segregation of duties policy and procedure, which includes:

- A segregation of duties matrix that specifies access by job function.

- A process to periodically review user access to ensure appropriate access is granted and terminated employees no longer have access.

Response: **Concur with modification** – In process. CTS has requested the Juvenile Probation department to issue an administrative order to effect changes in business processes to effect the necessary changes. CTS will continue to assist the customer towards this goal.

Target Completion Date: May 19, 2008.

Benefits: This change will result in the department's full adherence to CObIT standards.

Recommendation B: Obtain key process owner approval on the policy to ensure understanding of the approval and documentation necessary for all new user provisioning requests.

Response: **Concur – Completed**. CTS maintains records of user access requests and approvals. CTS will continue to streamline its provisioning process and comply with CObIT standards in this area.

Completion Date: October 31, 2007.

Benefits: Key process owner approval on the policy will ensure appropriate policies and procedures exist.

Recommendation C: Have CTS project management office review iCIS Issue Tracker access privileges to better control issue status and reporting.

Response: **Concur** - In Process.

Target Completion Date: May 19, 2008.

Benefits: Improved issue status and reporting information will exist within tracker.

Recommendation D: Request a review of the personnel change notification process by Judicial Branch Human Resources.

Response: **Concur with modification – Completed**. CTS concurs, however also understands that a need exists for better integration with the County's PeopleSoft system and associated requirements. As for our efforts within Judicial Branch Human Resources, we have begun to

investigate strategies to further strengthen our existing processes and policies. In the long-run, the goal is a seamless process that includes Human Resources. CTS will also design new methods of auditing the granting and removal of user access.

Target Completion Date: February 15, 2008.

Benefits: A simplified and more accurate personnel change notification process will directly translate to better security within iCIS.

Issue 4 Reporting and Interface Requirements

Court Technology Services did not formally document reporting and interface requirements for the Juvenile Probation system conversion. This lack of documentation could lead to the inability of Juvenile Probation to obtain needed reports and supply data to other agencies when required. Court Technology Services should work with Juvenile Probation to address remaining reporting and interface requirements.

Response: **Concur with modification.** CTS has documentation to support reporting and interface requirements (available upon request) approved by the customer.

Recommendation A: Generate a complete list of iCIS Juvenile Probation reports (from Crystal Reports).

Response: **Concur with modifications – Completed.** CTS performed a gap analysis of reports for the purpose of identifying those that existed in JOLTS and those that the Juvenile Probation department still needed for the new system. CTS also created a list of iCIS Juvenile Probation reports that require development and identified those not needed in the new system.

Completion Date: October 31, 2007.

Benefits: This will ensure that the customer department's reporting needs are met.

Recommendation B: Meet with key end-users and perform a report requirements review to ensure that the current reports in iCIS Juvenile Probation meet business and regulatory reporting requirements.

Response: **Concur - Completed**. See response to Recommendation A above.

Completion Date: October 31, 2007.

Benefits:

Recommendation C: Meet with key end-users and determine inbound and outbound system interface requirements. Generate a list of all existing inbound and outbound system interfaces and compare the two lists to ensure all interfaces exist, are secure, and supplying accurate information.

Response: **Concur – Completed**. CTS used the JOLTS integration points' document from John Barrett as basis for designing and developing the inbound and outbound interfaces for the new iCIS modules. Additionally, CTS developed a list of the replacement iCIS interfaces and reviewed them with Juvenile Probation staff.

Completion Date: October 31, 2007.

Benefits:

Recommendation D: Evaluate Crystal Report version upgrade options.

Response: **Management accepts the risk of this issue - Completed**. CTS is aware of upgrade options; however, the version used by iCIS is stable and no foreseeable problems exist at this time.

Target Completion Date: N/A.

Benefits: N/A.

Issue 5 Conversion Issue Tracking

Project management did not effectively track issues identified during the conversion process. Adequately capturing issue information ensures effective and timely resolution. Court Technology Services should define a complete issue tracking process, including a method of communicating issue resolution to the end-user.

Response: **Concur with modification.** iCIS includes an issue tracking system that is widely used by both users and CTS staff; it was enhanced to include the appropriate information and features necessary to more fully track issues. Additionally, CTS recently hired a Director who is charged with establishing a Project Management Office that will develop and more fully enforce the necessary controls to bring CTS's tracking capability to acceptable industry standards.

Recommendation A: Define a policy and procedure outlining what information is to be captured for all issues, where such information should be placed, and the method of notifying end-users of resolution. Examples include:

- Priority levels and resources
- Root cause analysis of issues
- End-user notification

Response: **Concur with modification – Completed**. iCIS Tracker was enhanced to support priority levels and end-user notifications. The enhanced tracker process is well-defined and meets CObIT industry average maturity level. With the establishment of a CTS PMO, CTS will reinforce Tracker reporting in the root cause analysis area.

Target Completion Date: N/A.

Benefits: A conversion issue tracking policy and procedure will ensure tasks are handled in the appropriate order, will allow for the early identification of the root cause to problems, and will keep end-users informed about problem status.

Recommendation B: Review audit logs on a regular basis (routinely but no less than quarterly) instead of waiting until there is an exception or investigation.

Response: **Concur with modification - Completed**. As a high priority to ensure system performance, CTS has reviewed and currently reviews exception and error logs on a daily basis, if not real-time. From May 2007 through January 16, 2008, CTS application manager Steve Scales and CTS database administrator Lee Ervin monitored the logs daily on a real-time basis. The monitoring consisted of viewing graphical charts on a monitor, and viewing exception logs at certain times of the business day.

Target Completion Date: N/A.

Benefits: N/A.

Approved By :

3/7/08

David L. Stevens, Chief Information Officer **Date**

for Marcus W. Reinkensmeyer

Marcus W. Reinkensmeyer, Court Administrator **Date** 3/7/08

3/7/08

Honorable Barbara R. Mundell, Presiding Judge **Date**